

## CLAIMS

1. A station-side communicating apparatus that performs one-to-N communication with a plurality of subscriber devices via a time-division-multiple-access line, and controls allocation of upload bandwidth shared by the subscriber devices by acquiring bandwidth request amount from the subscriber devices, the station-side communicating apparatus comprising:
  - an allocation determining unit that determines a bandwidth allocation for each of the subscriber devices in each data-collection cycle; and
  - a history managing unit that takes a history of a request increment from the bandwidth request amount acquired from more than one time of data collections and an allocation amount allocated by the allocation determining unit for the bandwidth request amount, and presents bandwidth request amount to be a target for the allocation determination to the allocation determining unit by dividing the bandwidth request amount into a plurality of request increments indicated by the history.
2. The station-side communicating apparatus according to claim 1, wherein the allocation determining unit detects a boundary between the request increments in the bandwidth request amount that is presented by the history managing unit for each of the subscriber devices, and executes the bandwidth allocation for a portion of the bandwidth request amount.
3. The station-side communicating apparatus according to claim 1, wherein the allocation determining unit detects a boundary between the request increments in the bandwidth request amount that is presented by the history managing unit for each of the subscriber devices, and determines the allocation amount from the request increments when executing the bandwidth allocation for a portion of the bandwidth request amount.
4. The station-side communicating apparatus according to claim 1, wherein when executing the bandwidth allocation for a portion of the bandwidth request amount by detecting a boundary between the request increments in the

bandwidth request amount that is presented by the history managing unit for each of the subscriber devices, if the bandwidth request amount has a remaining portion for which the allocation is not performed in the present bandwidth-update cycle, the allocation determining unit determines a bandwidth  
5 to be allocated to a corresponding subscriber device in a next bandwidth-update cycle in advance using the remaining portion.

5. The station-side communicating apparatus according to claim 1, wherein the history managing unit manages, when taking the history for each of  
10 the subscriber devices, a temporal variation of the bandwidth request amount, and disposes the request increments in the bandwidth request amount to be presented to the allocation determining unit in such a manner that a temporal relation is recognizable between the request increments, based on the temporal variation of the bandwidth request amount, and  
15 the allocation determining unit sequentially determines the allocation for the request increments in the bandwidth request amount that is presented by the history managing unit for each of the subscriber devices from an oldest request increment.

20 6. The station-side communicating apparatus according to claim 1, wherein the history managing unit manages, when taking the history for each of the subscriber devices, a temporal variation of the bandwidth request amount, and detects a transmission delay time of a packet data remains in the subscriber device, based on the temporal variation of the bandwidth request  
25 amount.

7. The station-side communicating apparatus according to claim 1, wherein the history managing unit manages, when taking the history for each of the subscriber devices, a temporal variation of the bandwidth request amount,  
30 detects a transmission delay time of a packet data remains in the subscriber device, based on the temporal variation of the bandwidth request amount, and when the detected transmission delay time is large, and selects, as the

bandwidth request amount to be presented to the allocation determining unit, the bandwidth request amount corresponding to the packet data with the large transmission delay time.

- 5     8.     The station-side communicating apparatus according to claim 1, wherein  
the allocation determining unit classifies the request increments in the  
bandwidth request amount that is presented by the history managing unit for  
each of the subscriber devices into a plurality of groups with different priorities  
based on contract differences with respect to the subscriber devices, and  
10   executes the bandwidth allocation for the request increments from a group with  
a higher priority.